

A Leaf-Mining Crane-fly in Hawaii.

BY OTTO H. SWEZEY.

Dicranomyia foliocuniculator n. sp.

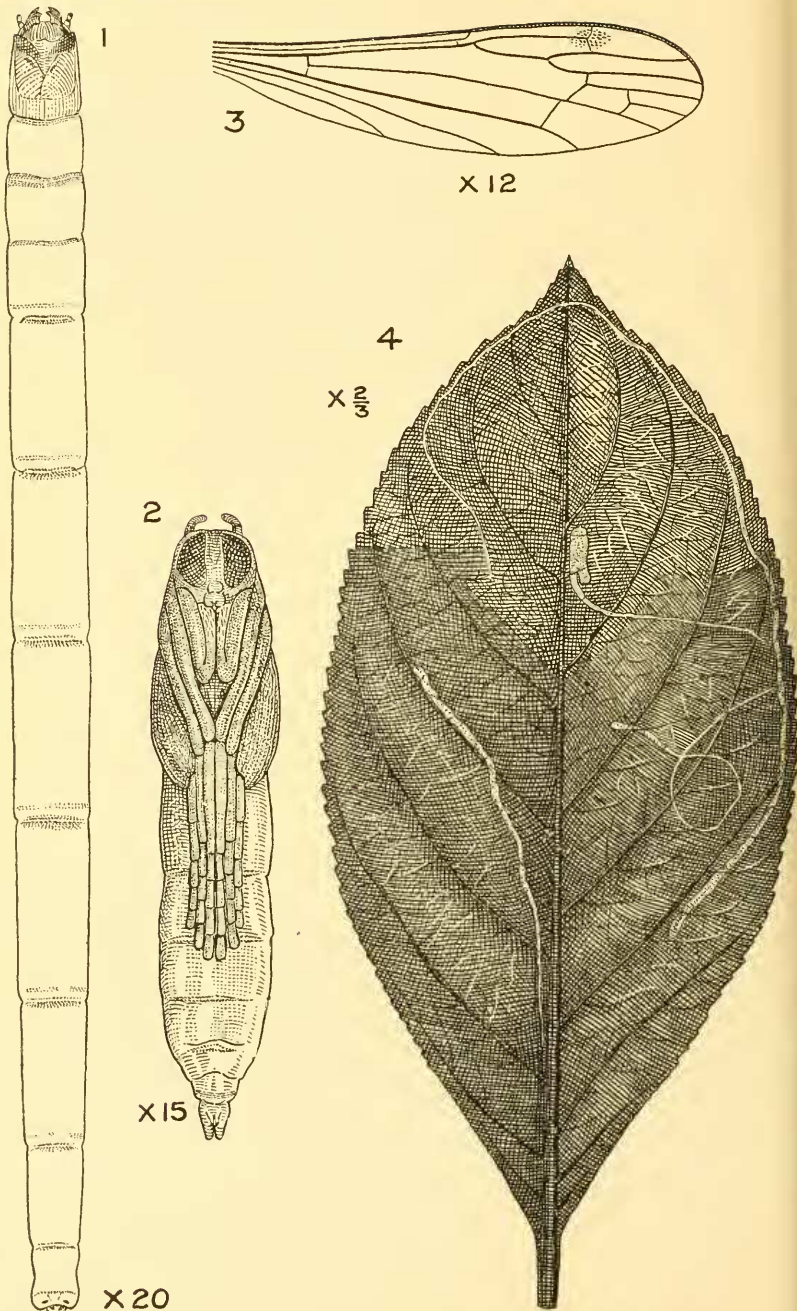
Head, antennae and mouth parts dark fuscous; thorax and abdomen fuscous above, ochraceous below, abdomen sometimes greenish below; halteres fuscous, the stem paler; wings fuscous-hyaline, not spotted except a spot of more intense fuscous at the termination of the first longitudinal vein; auxiliary vein for the last three-fifths running very close to the first longitudinal vein, terminating a little before the origin of the second longitudinal vein, connected with first longitudinal a little before termination; venation as shown in Fig.: legs slender, fuscous, femora paler towards base, coxae and trochanters ochraceous. Length of body, 4mm.; wing, 5mm.

HABITAT. Larvae mining the leaves of *Cyrtandra paludosa* and other species of *Cyrtandra*, in the mountains at Punaluu, on the windward side of Oahu. No adults collected. I first discovered the mines of this insect in the leaves of *Cyrtandra* bushes growing along the Punaluu Trail, June 11, 1911, and reared a few specimens. Later, on the following dates, I again collected mined leaves and reared a few more specimens: August 10, 1913; September 13, 1914. The adults proved to be different from any hitherto described species in Hawaii.

MINE. The mine is long and slender, more or less sinuous and wandering about the leaf, often following the margin, gradually widening as the larva increases in size. There may be as many as a dozen mines in one leaf.

LARVA. The full-grown larva is 10-11mm., elongate, slender, cylindrical, gradually tapering posteriorly, without setae, footless, anterior and posterior margins of segments (except 3 or 4 anterior and 2 posterior ones) minutely roughened on dorsal and ventral surface to assist in locomotion. Whitish, transparent so that the alimentary canal and tracheal system are plainly seen, the latter having two longitudinal tracheae connecting with two black spiracles above the anus. Head with brownish mouth-parts, mandibles working horizontally, the whole head retracting into the following segment which in turn retracts into the next. Segments 1-3 of moderate length, 4-10 elongate, remaining segments short.

PUPA. The pupa is formed within the mine, the larva



Dieranomyia foliocuniculator. Fig. 1, larva; fig. 2, pupa; fig. 3, wing venation; fig. 4, leaf of *Cyrtandra* showing mines.

sometimes receding somewhat from the terminal end of the mine before pupating. Some were found with the anterior end projecting thru a break in the dead epidermis of the leaf. 6-7mm. long, slender, nearly cylindrical; pale greenish, head, wing-sheaths and leg-sheaths dark fuscous to nearly black just before the emergence of the fly. Thorax with two yellowish brown dorsal horns, the respiratory processes, projecting forward with the tips curved ventrally. Leg-sheaths of equal length, extending along ventral side to the apex of the fourth abdominal segment; wing-sheaths placed laterally, extending to apex of second abdominal segment; margins of abdominal segments minutely roughened as in the larva, which enables the pupa to force itself half way out of the mine before the emergence of the fly; apex of abdomen slightly bifid.

This is apparently a very remarkable habit for a crane-fly, as I have been unable to find any mention of such habits in literature. The larvae of those species that have been studied feed at the roots of plants, beneath dead bark, in rotten logs and other decaying vegetation, etc., some are aquatic, and others live on leaves like caterpillars. There are numerous species of *Dicranomyia* in the mountains of the Hawaiian Islands, many of which are yet undescribed, and the habits of the larvae are mostly unknown. It may be that other species may be found to have this leaf-mining habit when their habits are studied.

NOVEMBER 5TH, 1914.

The one hundred-eleventh regular meeting was held in the usual place, President Swezey in the chair. Other members present: Messrs. Giffard, Ehrhorn, Fullaway, Illingworth, Kuhns, Osborn, Pemberton and Potter; and Mr. C. F. Mant, visitor.

Minutes of previous meeting read and approved.

Mr. Swezey proposed the name of Mr. C. F. Mant for active membership in the Society.

ENTOMOLOGICAL PROGRAM.

Mr. Ehrhorn read from the October, 1914, number of *Science*, a paper by Fernando Sanford of Stanford University, giving results of the use of Cyanide of Potassium injected into